



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/298,008 | 04/22/1999 | JERRELL P. HEIN | 75622.P0001 | 1575 |

22503 7590 07/26/2005

DAVIS & ASSOCIATES
P.O. BOX 1093
DRIPPING SPRINGS, TX 78620

| |
|----------|
| EXAMINER |
|----------|

BRINEY III, WALTER F

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2646

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/298,008

Applicant(s)

HEIN ET AL.

Examiner

Walter F. Briney III

Art Unit

2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 11, 13-18, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 12, 19, 20 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claims 1, 2, 4, 6, 13, 15 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhou (US Patent 6,219,417) in view of Zhou (US Patent 5,926,544), which is incorporated by reference in column 10, lines 12-18, of Zhou '417.**

Claim 1 is limited to *an integrated circuit package apparatus*. Zhou '417 discloses a direct current feed system as seen in figure 3. See Abstract. The disclosure of Zhou is directed primarily toward decreasing the fabrication size of a telephone line card. To this end, Zhou replaces all analog battery control circuitry that is normally associated with each respective SLIC (see figure 2) with a single digital signal processor that is shared with a plurality of SLIC devices located on a single line card (figure 3). Figures 5A and 5B depict in greater detail the system of figure 3, and clearly illustrate that each line card comprises a plurality of integrated circuits. In particular, a quad converter (e.g. 506[1]) interfaces four XASLIC devices (504[1]-504[4]) to a single DSP (508). Each XASLIC includes at least seven different connections between the quad converter. As disclosed by Zhou, one is for a *sensed tip signal* I_A , and a second is for a *sensed ring signal* I_B . See column 5, line 55, through column 6, line 10; and

Art Unit: 2646

column 6, line 59, through column 7, line 1. Upon receiving said signals, the quad converter passes them to the DSP. The DSP detects ring trip status using the I_A and I_B signals and sets a ring trip flag in step (928). See column 10, line 60, through column 12, line 32; figure 7, step 718; and all of figure 9. The DSP subsequently passes a *control signal* used for DC feed control that is converted and *generated* at the output of the quad converter and fed to each XASLIC. See Zhou '544 figure 9 where DC feed control (917) commences in response to determining that ringing is no longer present (910) which is based on the ring trip flag set in step (928) of Zhou '417. Clearly, each block is a discrete integrated circuit. Therefore, Zhou anticipates all limitations of the claim.

Claim 2 is limited to *the integrated circuit package of claim 1*, as covered by Zhou. Zhou indicates that the sensed tip and ring signals are sensed through series connected tip and ring feed resistors, which indicates that the potential difference between the two ends of each resistor is measured, which indicates that each *sensed tip and ring signal* includes two sampled voltages whose difference is proportional to the tip and ring current. Therefore, Zhou anticipates all limitations of the claim.

Claim 6 recites essentially the same subject matter as claim 2, and is rejected for the same reasons. Therefore, Zhou anticipates all limitations of the claim.

Claim 17 recites essentially the same subject matter as claim 2, and is rejected for the same reasons. Therefore, Zhou anticipates all limitations of the claim.

Claim 4 recites essentially the same subject matter as claim 1, as covered by Zhou, and further recites *sense circuitry* and *power circuitry*. The *sense circuitry* of

Zhou used for generating the tip and ring currents I_A and I_B includes the external loop feed resistors. See column 5, lines 55-61. The *power circuitry* is disclosed as residing within each XASLIC. See column 5, lines 61-64. Therefore, Zhou anticipates all limitations of the claim.

Claim 13 recites essentially the same subject matter as claim 1, and is rejected for the same reasons.

Claim 15 recites essentially the same subject matter as claim 4, and is rejected for the same reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou (US Patent 6,219,417) in view of Zhou (US Patent 5,926,544), which is incorporated by reference in column 10, lines 12-18, of Zhou '417.**

Claim 3 is limited to *the apparatus of claim 1*, as covered by Zhou. Zhou simply does not disclose the logic family used to manufacture the circuitry depicted in figures 5A and 5B. Therefore, Zhou anticipates all limitations of the claim with the exception *wherein the integrated circuit is a complementary metal oxide semiconductor (CMOS) integrated circuit.*

The examiner takes Official Notice of the fact that CMOS technology was well known at the time of the invention and was readily applied to both digital and analog circuits to provide low power and reliable integrated circuits. It would have been obvious to one of ordinary skill in the art to fabricate the integrated circuits of figures 5A and 5B using CMOS technology as was known in the art for the purpose of implementing a low power and reliable telephone line card.

Claim 14 recites essentially the same subject matter as claim 3, and is rejected for the same reasons.

3. **Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou (US Patent 6,219,417) in view of Zhou (US Patent 5,926,544), which is incorporated by reference in column 10, lines 12-18, of Zhou '417, and further in view of Cotreay (US Patent 5,528,682).**

Claim 5 is limited to *the subscriber loop linefeed driver of claim 4*, as covered by Zhou. Made clear by the figures is the absence of any disclosure pertaining to the exact structure of the current sensing circuitry used to generate signals I_A and I_B besides the suggestion that a voltage differential is taken across the line feed resistors. Therefore, Zhou anticipates all limitations of the claim with the exception of *a pair of tip sampling resistors and a pair of ring sampling resistors*.

In accordance with the disclosed current detecting details of Zhou, Cotreay provides a prior art means of converting two differential voltages into a signal corresponding to a single line current. As seen in figure 4 of Bijman, a differential voltage sampled from two ends of a feed resistor (40) is fed into *a pair of sampling*

resistors (66) and (68) and converted into a current signal at the output of an operational amplifier (36). In this manner, generation of currents I_A and I_B can be realized with circuitry that is isolated from the tip and ring lines, mitigating interference to the normal operation of the lines line card.

It would have been obvious to one of ordinary skill in the art to generate a signal representing a line current from a differential voltage measurement using the current detector presented in figure 4 of Cotreay simply because Zhou does not specifically disclose how to do so while requiring such an effect and because the sampling resistors (66) and (68) isolate the current detector from the tip and ring lines.

Claim 16 recites essentially the same subject matter as claim 5, and is rejected for the same reasons.

4. **Claims 7, 10, 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou (US Patent 6,219,417) in view of Zhou (US Patent 5,926,544), which is incorporated by reference in column 10, lines 12-18, of Zhou '417, and further in view of Rosch et al. (US Patent 5,274,702).**

Claim 7 is limited to *the subscriber loop linefeed driver of claim 4*, as covered by Zhou. Again, Zhou discloses the existence of DC feed circuitry, but does not detail the structure or how the control signals generated by the DSP and quad converter affect the operation of the feed circuit. Therefore, Zhou anticipates all limitations of the claim with the exception of *a tip and a ring control circuit*.

Rosch teaches a wideband telephone line interface circuit. See Abstract. In one embodiment depicted in figure 3, DC feed circuitry is illustrated and includes both *tip*

control circuitry (142) and (144) and *ring control circuitry* (148) and (150). Each of the *control circuits* is responsive to a pair of control signals that are uniquely associated with the tip and ring lines. As such, fine control is provided over the DC feed circuitry.

It would have been obvious to one of ordinary skill in the art to implement the DC feed circuitry and control using the circuitry as taught by Rosch simply because Zhou fails to disclose the necessary structure.

Claim 18 recites essentially the same subject matter as claim 7, and is rejected for the same reasons.

Claim 10 is limited to *the subscriber loop linefeed driver of claim 4*, as covered by Zhou. Again, Zhou discloses the existence of voiceband data signals that are bidirectionally coupled between the XASLIC devices and the DSP by way of the quad converter; however, Zhou does not disclose the interface. Therefore, Zhou anticipates all limitations of the claim with the exception of *voiceband circuitry*.

Rosch teaches a wideband telephone line interface circuit. See Abstract. Figure 3, in addition to the DC feed circuitry discussed in claim 7, includes an interface that provides AC signals to a respective subscriber loop by way of terminals (36). As seen clearly from figure 3, the AC interface includes a capacitor (120) and a *load* (118). The capacitor isolates the voiceband data interface from DC signals present on the subscriber loop.

It would have been obvious to one of ordinary skill in the art to implement the voiceband circuitry of Zhou using the circuitry as taught by Rosch simply because Zhou fails to disclose the necessary structure.

Claim 11 is limited to *the subscriber loop linefeed driver of claim 10*, as covered by Zhou. Figure 3 of Rosch clearly depicts an *output node* labeled TX, a *load* (118) and a *voiceband data input node* that is *capacitively coupled* to either the tip or ring node by capacitor (136). Therefore, Zhou in view of Rosch makes obvious all limitations of the claim.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

5. **Claims 8, 9, 12, 19, 20 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

Claim 8 is limited to *the subscriber loop linefeed driver of claim 7*, as covered by Zhou. Clearly, the detailed structure recited by this claim is not depicted by either Zhou or Rosch. Thus, claim 8 is allowable over Zhou in view of Rosch.

Claim 9 is limited to *the subscriber loop linefeed driver of claim 8*, as covered by Zhou. Claim 9 depends on claim 8, and is allowable over Zhou in view of Rosch for at least the same reasons.

Claim 12 is limited to *the subscriber loop linefeed driver of claim 4*, as covered by Zhou. While it was shown in the rejection of claim 11 that it would have been obvious to include capacitively coupled voiceband circuitry, there is no suggestion in the prior art to modify the line card disclosed by Zhou, which transmits all data signals

separately, such that audio and DC linefeed control signals are superimposed. Thus, claim 12 is allowable over Zhou in view of Rosch.

Claim 19 recites essentially the same subject matter as claim 8, and is allowable over Zhou for at least the same reasons.

Claim 20 depends on claim 19, and is allowable over Zhou for at least the same reasons.

Claim 23 recites essentially the same subject matter as claim 12, and is allowable over Zhou for at least the same reasons.

Response to Arguments

Applicant's arguments filed 18 February 2005 with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Because the new grounds of rejection presented within this office action were not necessitated by amendment, this office action is NON-FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2646

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SINH TRAN
SUPERVISORY PATENT EXAMINER

WFB
7/19/05